polylysine core were not chiral ), was synthesized manually starting with 3 g of the Fmoc-Pal-Peg-PS resin with an initial substitution of 0.2 mmol/g of resin. DMF was used as solvent for the coupling steps and the washing steps, while Fmoc deprotection was achieved with 1% DBU/2% Piperidine in DMF. Monitoring of the coupling and deprotection steps was conducted using the Kaiser test. All amino acids were doubly coupled for one hour, using as activating reagents, HOAt for the O-Pentafluorofenil ester amino acid and HATU/DIPEA for the free acids. An excess of 5 equivalents of amino acid over the resin substitution was used for alanine and the first lysine, 10 equivalents for the second lysine, and 20 equivalents for the following amino acids. The peptide was cleaved from the resins and purified as for the (L)-RTR peptide.

Preparation of solutions

Synthetic peptides were dissolved in phosphate buffered saline (pH 7.3). The osmolality was between 280 and 320 mOsm.

Alkali-Injury Model

Animals were maintained and treated in full compliance with the Association for Research in Vision and Ophthalmology

(ARVO) Resolution on the Use of Animals in Research. Forty-eight New Zealand Dutch strain albino rabbits (Myrtles Rabbitry, Thompson Station, TN, U.S.A.) weighing 2.0 to 2.5 kg were anesthetized with ketamine HCl (12 mg/kg) and xylazine (7.5 mg/kg). Two drops of topical proparacaine (Allergan, Hormigueros, Puerto Rico) were placed in the right eye of each rabbit. Following ocular proptosis, a 12 mm plastic well was centered on the cornea and 0.4 ml of 1 N NaOH instilled into the well and left for a period of 35 sec. The alkali was aspirated and the well irrigated with 10 ml of physiological saline. Erythromycin ointment (0.5%) was applied two times a day and study medications given by the technique of Fraunfelder. Double blind examinations (slit lamp and dissecting microscopy) were conducted on Monday, Wednesday and Friday with photographs on Wednesday. Evaluation was made for the presence and size of epithelial defects, corneal ulceration, perforation and vascularization. Animals were randomly subdivided into two groups of 16 eyes each: 1) Phosphate buffered saline (PBS) control and 2) 800 μM (D)-RTR tetramer in PBS or 1.5 mM (L)-RTR tetramer in PBS alternating every hour. Each animal received one drop of the appropriate medication every hour for 14 hours a day for 33 days

and dropping was discontinued until the end of the experiment on day 42.

Results

The clinical results at day 33 showed a statistically significant reduction in the frequency of corneal ulceration in the RTR tetramer group compared to the PBS group. There were 9 ulcers in the PBS group and 4 ulcers in the RTR tetramer group (p=0.0360).

The remaining days from day 33 to 42 transpired without any further topical dropping in any animal group. Despite cessation of all drops at day 33 the favorable effect of the RTR inhibitor (p = 0.0046) persisted to the end of the experiment. The clinical results at day 42 are detailed in the table.